AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1 (Currently amended): A transmission system, comprising:

a plurality of receivers, each of the plurality of receivers receiving signals from one of a plurality of transmission bands, the plurality of transmission bands being transmitted on a single transmission medium; and

a cross-channel interference canceller coupled to the plurality of receivers, the cross-channel interference canceller coupled to receive the signals from each of the plurality of transmission bands.

Claim 2 (Original): The system of Claim 1, wherein at least one of the plurality of receivers comprises:

a down converter that converts an input signal from the one of the plurality of transmission bands to a base band;

a filter coupled to receive signals from the down converter, the filter substantially filtering out signals not in the base band;

an analog-to-digital converter coupled to receive signals from the filter and generate digitized signals;

an equalizer coupled to receive the digitized signals; and

a trellis decoder coupled to receive signals from the equalizer and generate recreated data, the recreated data being substantially the same data transmitted by a corresponding transmitter.

Claim 3 (Original): The system of Claim 2, wherein the down-converter creates an in-phase signal and a quadrature signal, the in-phase signal being the input signal multiplied by a cosine function at the frequency of the one of the plurality of transmission bands and the quadrature signal being the input signal multiplied by a sine function at the frequency of the one of the plurality of transmission bands.

Claim 4 (Original): The system of Claim 3, wherein the filter includes an in-phase filter filtering the in-phase signal and a quadrature filter filtering the quadrature signal.

Claim 5 (Original): The system of Claim 3, further including an offset block coupled between the down-converter and the filter, the offset block offsetting the in-phase signal and the quadrature signal such that signals output from the analog-to-digital converter averages zero.

Claim 6 (Original): The system of Claim 3, further including an amplifier coupled between the filter and the analog-to-digital converter, the amplifier amplifying an in-phase filtered signal from the in-phase filter and a quadrature filter signal from the quadrature filter such that the analog-to-digital converter is filled.

Claim 7 (Original): The system of Claim 6, wherein an in-phase gain of the amplifier and the quadrature gain of the amplifier are adaptively chosen in an automatic gain controller.

Claim 8 (Original): The system of Claim 7, wherein the automatic gain controller sets the in-phase gain and the quadrature gain based on the digitized signals from the analog to digital converters.

Claim 9 (Original): The system of Claim 8, wherein the in-phase gain and the quadrature gain are equal.

Claim 10 (Original): The system of Claim 3, wherein the analog-to-digital converter includes a first analog-to-digital converter coupled to receive signals from the in-phase filter and a second analog-to-digital converter coupled to receive signals from the quadrature filter.

Claim 11 (Currently amended): The system of Claim ~~1~~2, further including a correction circuit coupled between the analog-to-digital converter and the equalizer.

Claim 12 (Original): The system of Claim 11, wherein the correction circuit includes an adjustment to correct phases between the in-phase signal and the quadrature signal.

Claim 13 (Original): The system of Claim 12, wherein a small portion of one of the in-phase signal and the quadrature signal are added to the opposite one of the in-phase signal and the quadrature signal.

Claim 14 (Original): The system of Claim 13, wherein a second portion of the opposite one of the in-phase signal and the quadrature signal is added to the opposite one of the in-phase signal and the quadrature signal.

Claim 15 (Original): The system of Claim 14, wherein the small portion and the second portion are adaptively chosen.

Claim 16 (Original): The system of Claim 15, wherein the small portion is a function of in-phase and quadrature output signals from the correction circuit.

Claim 17 (Original): The system of Claim 16, wherein the second portion is a function of the ratio between in-phase and quadrature signals from the correction circuit.

Claim 18 (Original): The system of Claim 3, wherein a phase rotator circuit is coupled between the analog-to-digital converter and the equalizer.

Claim 19 (Original): The system of Claim 18, wherein a parameter of the phase rotator circuit is adaptively chosen.

Claim 20 (Original): The system of Claim 3, wherein an amplifier is coupled between the equalizer and the trellis decoder.

Claim 21 (Original): The system of Claim 20, wherein a quadrature correction is coupled between the amplifier and the trellis decoder.

Claim 22 (Original): The system of Claim 21, wherein an offset circuit is coupled between the quadrature correction and the trellis decoder.

Claim 23 (Original): The system of Claim 20, wherein an in-phase gain and a quadrature gain of the amplifier are adaptively chosen from error signals calculated from sliced values.

Claim 24 (Original): The system of Claim 23, wherein the sliced values are determined from input signals to the trellis decoder.

Claim 25 (Original): The system of Claim 21, wherein a parameter of the quadrature correction is adaptively chosen.

Claim 26 (Original): The system of Claim 22, wherein a parameter of the offset circuit is adaptively chosen.

Claim 27 (Original): The system of Claim 2, wherein the equalizer is a complex equalizer executing a transfer function, the transfer function having parameters $C_k^x(j)$ and $C_k^y(j)$ where j is an integer.

Claim 28 (Original): The system of Claim 2, wherein the equalizer is a complex equalizer executing a transfer function, the transfer function having parameters $C_k^{x,I}(n)$, $C_k^{y,I}(n)$, $C_k^{x,Q}(n)$ and $C_k^{y,Q}(n)$, where n is an integer indicating the clock cycle, and k is an integer indicating the channel.

Claim 29 (Original): The system of Claim 27, wherein the center parameters $C_k^x(0)$ and $C_k^y(0)$ are fixed.

Claim 30 (Original): The system of Claim 29, wherein $C_k^x(0)$ is one and $C_k^y(0)$ is zero.

Claim 31 (Original): The system of Claim 29, wherein the parameters $C_k^x(-1)$ and $C_k^y(-1)$ are fixed.

Claim 32 (Original): The system of Claim 1, wherein the cross-channel interference canceller provides transfer functions coupled between pairs of channels so that each of the plurality of channels can be corrected for cross-channel interference.

Claim 33 (Original): The system of Claim 32, wherein the transfer functions includes one or more time delays.

Claim 34 (Original): The system of Claim 32, wherein coefficients of the transfer functions are adaptively chosen.

Claim 35 (Original): The system of Claim 1, wherein an operating frequency of the plurality of receivers is adjusted to match that of a corresponding plurality of transmitters transmitting data into the transmission bands.

Claim 36 (Original): A method of transmitting data, comprising:

receiving a transmitted signal from a transmission medium into a plurality of receivers;

each of the plurality of receivers down-converting the transmission signal by a set carrier frequency; and

cancelling the cross-channel interference in each of the plurality of receivers.

Claim 37 (Original): The method of Claim 36, wherein cancelling the cross-channel interference in each of the plurality of receivers includes:

receiving equalized signals from each of the plurality of receivers; and

subtracting components of the equalized signals from each of the plurality of receivers from each of the other receivers.

Claim 38 (Original): The method of Claim 37, wherein subtracting components of the equalized signals includes providing a transfer function between each of the plurality of receivers.

Claim 39 (Original): The method of Claim 38, wherein the transfer function includes a multi-tap transfer function.

Claim 40 (Original): The method of Claim 39 wherein coefficients of the transfer function are adaptively chosen.

Claim 41 (Original): A transmission system, comprising:

means for transmitting data into multiple channels on a transmission medium, each of the multiple channels having a carrier frequency;

means for receiving data from the transmission medium;

means of down-converting data from each of the multiple channels;

means for digitizing the data from each of the multiple channels;

means for equalizing the data from each of the multiple channels to correct for intersymbol interference;

means for correcting the data from each of the multiple channels for cross-channel interference; and

means for providing recovered data based on the corrected and equalized data from each of the multiple channels.